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COVID-19 in Africa: Vulnerabilities and assets

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Introduction

Not only did the COVID-19 disease arrive on Africa's shores (and at its airports) later than in Asia, Europe, and North America (Loembé et al., 2020), but for months the numbers of infections and deaths also appeared to remain relatively low. As of early August, the continent had experienced more than 1 million confirmed cases and 23,000 deaths (Africa CDC, 2020), though these figures were increasing rapidly.

At this point, the causes behind Africa's comparatively low initial numbers are not completely clear. One reason may be that early and decisive responses on the part of many African governments prevented the virus from gaining an easy foothold (Beech, Rubin, Kurmanaev, & MacLean, 2020; Hirsch, 2020; Levinson, 2020; Moore, 2020; Loembé et al., 2020). Indeed, according to the International Center for Not-for-Profit Law (2020), 46 African countries took some form of official action – in the form of new legislation or executive orders and decrees – restricting or banning travel and public gatherings, enforcing quarantines, or in some cases imposing full "lockdowns."

But Africa, somewhat paradoxically, may also have benefited from a range of structural factors, such as the continent's relatively limited international exposure, its relatively low rates of intra- and inter-state air travel (Marbot, 2020), a generally hot and humid climate, relatively lower levels of population density and urbanization (De Waal, 2020; Marbot, 2020), and its substantially younger populations (Binding, 2020). It may have also profited from cultural factors, such as the fact that older people tend to remain with their families, rather than being institutionalized in retirement homes (Marbot, 2020), though this also has consequences for residential density, or that it has a more collectivist, less individualistic culture, which, according to recent research, may make COVID-19 interventions more effective (Frey, Presidente, & Chen, 2020).

Yet most public health experts remain wary, and still expect significant further transmission of the virus across the continent, requiring drastic public health responses and interventions, especially where governments eased initial restrictions and lockdowns. Indeed, some officials have expressed concerns that Africa's low numbers merely reflect very low rates of testing (Sly, 2020) and even, in some countries such as Tanzania, deliberate under-reporting (BBC, 2020). Some press reports have described instances where local reports of death rates bear little relation to official data (MacLean, 2020; York, 2020).

These concerns appear well-founded given that community transmission is now present in all African countries and the number of infections increased by 50%, and deaths by 22%, in the last two weeks of July (World Health Organization, 2020). And officials at the Africa Centres for Disease Control and Prevention have warned that Africa could well become the next epicenter of the pandemic (Loembé et al., 2020).

If, as these events suggest, early interventions in African countries successfully erected a wall that kept the virus at bay, albeit temporarily, how well prepared are these countries if and when the virus penetrates their initial defenses? A wealth of Afrobarometer survey data suggests that Africans are especially vulnerable, in part due to lack of access to clean water and adequate health care (Gyimah-Boadi & Logan, 2020a; Logan, Howard, & Gyimah-Boadi, 2020). In this paper, we attempt to take the issue of vulnerability a step further by developing a more fine-grained approach, using insights from public health to examine different dimensions and components of vulnerability (Morrell, 2018).

Specifically, we develop three inter-connected indices intended to capture the extent to which Africans might 1) run a heightened "*risk of exposure to infection*," 2) face a heightened "*susceptibility to illness*" (once infected), and 3) face a "*lack of resilience*" (to recover once they become ill). In addition, a fourth index of "*lockdown readiness*" estimates the proportion of people who are more (or less) likely to be able to withstand the most severe forms of government health interventions, i.e. lockdowns or "shelter in place" orders,

We then demonstrate how cross-country variations in the extent of exposure and susceptibility, and in the degree to which people are prepared for a lockdown, might help us

better understand policy choices that African governments have made, and the extent to which these interventions were able to achieve desired reductions in mobility and contact.

Finally, we briefly explore some of the soft assets that governments can bring to the table, such as legitimacy and trust, that may help increase compliance with restrictions on mobility, especially in countries we have identified as least able to tolerate lockdowns.

Afrobarometer survey

Afrobarometer is a pan-African, non-partisan survey research network that provides reliable data on Africans' experiences and evaluations of democracy, governance, and quality of life. Seven rounds of surveys have been completed since 1999. Afrobarometer conducts face-to-face interviews in the language of the respondent's choice. Nationally representative samples of 1,200 to 2,400 yield country-level results with margins of error of +/-3 to +/-2 percentage points at a 95% confidence level. The data are weighted to ensure nationally representative samples. When reporting multi-country findings, all countries are weighted equally (rather than in proportion to population size).

This policy paper relies primarily on data from 45,823 interviews completed in 34 countries between September 2016 and September 2018 (see Appendix Table A.1 for a list of countries and fieldwork dates). It also makes comparisons to data collected in Round 3 (2005/2006), Round 4 (2008/2009), Round 5 (2011/2013), and Round 6 (2014/2015).

Key findings

- A three-tiered series of vulnerability indices – capturing risk of exposure, susceptibility to illness, and lack of resilience – reveals high levels of vulnerability across the continent, but also wide country variations:
    - At the first level, two-thirds (66%) of Africans are at heightened *risk of exposure* due to cramped living conditions or lack of essential services inside the household, ranging from a low of 11% in Mauritius to a high of 92% in Uganda and Niger.
    - Moving to the second level, nearly one-third (31%) not only are at heightened *risk of exposure* but also face heightened *susceptibility to illness* due to age or the experience of poverty and an inability to meet their basic survival needs.
    - At the third level, one-fourth (26%) of adults face a heightened *risk of exposure* and *susceptibility to illness* and in addition *lack resilience* because they do not have access to effective medical care should they become ill. This means that the vast majority of those who are most susceptible to illness also lack resilience based on inadequate access to medical care. While fewer than 1% of Mauritians lack resilience, almost two-thirds (64%) of Guineans fall into this category.
- A fourth index captures *lockdown readiness*, i.e. the capacity to endure a lockdown based on access within the home to essential services (water, sanitation, electricity), communications and information, and income for survival. Fewer than one-third (30%) of Africans are at least partially lockdown ready, and only one-quarter (24%) are fully lockdown ready.
- Risk of exposure is strongly negatively correlated with national income, while lockdown readiness is positively correlated with income. Indices of susceptibility and lack of resilience are also negatively correlated with national income, but the relationship is somewhat weaker.
- Governments tended to implement more stringent responses in the first half of 2020 in those countries characterized by higher levels of lockdown readiness. But since lockdown readiness was generally lowest where the risk of exposure to infection was highest, this means that government public health interventions were least stringent in the very countries that had the highest levels of exposure vulnerability.

- The extent of citizen compliance with state interventions (at least in the form of reduced mobility) appears to be a function of both people's ability to comply (lockdown readiness) and of the stringency of government policies.
- Countries with high exposure vulnerability but low lockdown readiness face particular challenges. Some will be able to draw on strong trust in elected leaders to secure essential public cooperation. Others cannot, although countries in this category more consistently display some of the highest levels of state legitimacy and support for the rule of law, as well as trust in religious and traditional leaders, so they may be able to draw on these resources to communicate their messages and secure compliance.

Dimensions of vulnerability

While vulnerability has a number of different understandings in common usage, human geographers and scholars of disaster (and public health) preparedness commonly disaggregate specific components and dimensions of vulnerability (Frazier, Thompson, & Dezzani, 2014; Hess, McDowell, & Luber, 2012). In particular, it seems clear that people and societies may differ in the extent to which they are *exposed* to, or liable to become infected by, a bacterial or viral pathogen. Likewise, the extent to which people and discrete (sub)populations are *susceptible* to developing severe illness, once exposed, is also likely to vary. A third dimension relates to variation in *resilience*, since even when people are exposed and susceptible, they may still differ in the extent to which they are able to respond to the disease and recover (biologically, socially, and structurally). In the case of COVID-19, people (i.e. individuals, populations, and societies) may also vary in their capability to endure the most severe forms of "non-pharmacological intervention" (NPI), which, as we have seen, can require people to stay at home ("shelter in place") for extended periods. Such NPIs are often referred to generically as "lockdowns."

To assess each of these dimensions of vulnerability ("*exposure*," "*susceptibility,*" and "*resilience*"), as well as "*lockdown preparedness,*" we draw on responses to questions provided by more than 45,000 Africans to Afrobarometer Round 7 surveys conducted in 34 countries across the continent in 2016-2018. While intended primarily as an instrument to monitor the social and political atmosphere in Africa, these surveys also probed aspects of living conditions and well-being of direct and indirect relevance to public health and epi/pandemic preparedness. Although many of these individual indicators might arguably be measured better (i.e. more extensively or precisely) by censuses or specialized labour force or demographic and health surveys, one advantage of Afrobarometer data is that many of these variables are measured simultaneously, so we are able, in a sense, to "layer" them to examine how they co-occur.

Afrobarometer data also allow us to examine issues of vulnerability and access to health care alongside citizen attitudes such as respect for the law and trust in institutions, factors that might be particularly important to secure compliance with intense and sustained government interventions. In addition, as Alex de Waal (2020) has pointed out, spatial and age distributions – together with mobility patterns – vary greatly across and within countries, so that understanding *relative* differences in vulnerability across African countries may be just as important as estimating *absolute* levels within them. For this reason, the direct cross-country comparability offered by Afrobarometer's data collection and population sampling tools is a substantial added advantage of this unique and valuable data set.

Exposure to infection

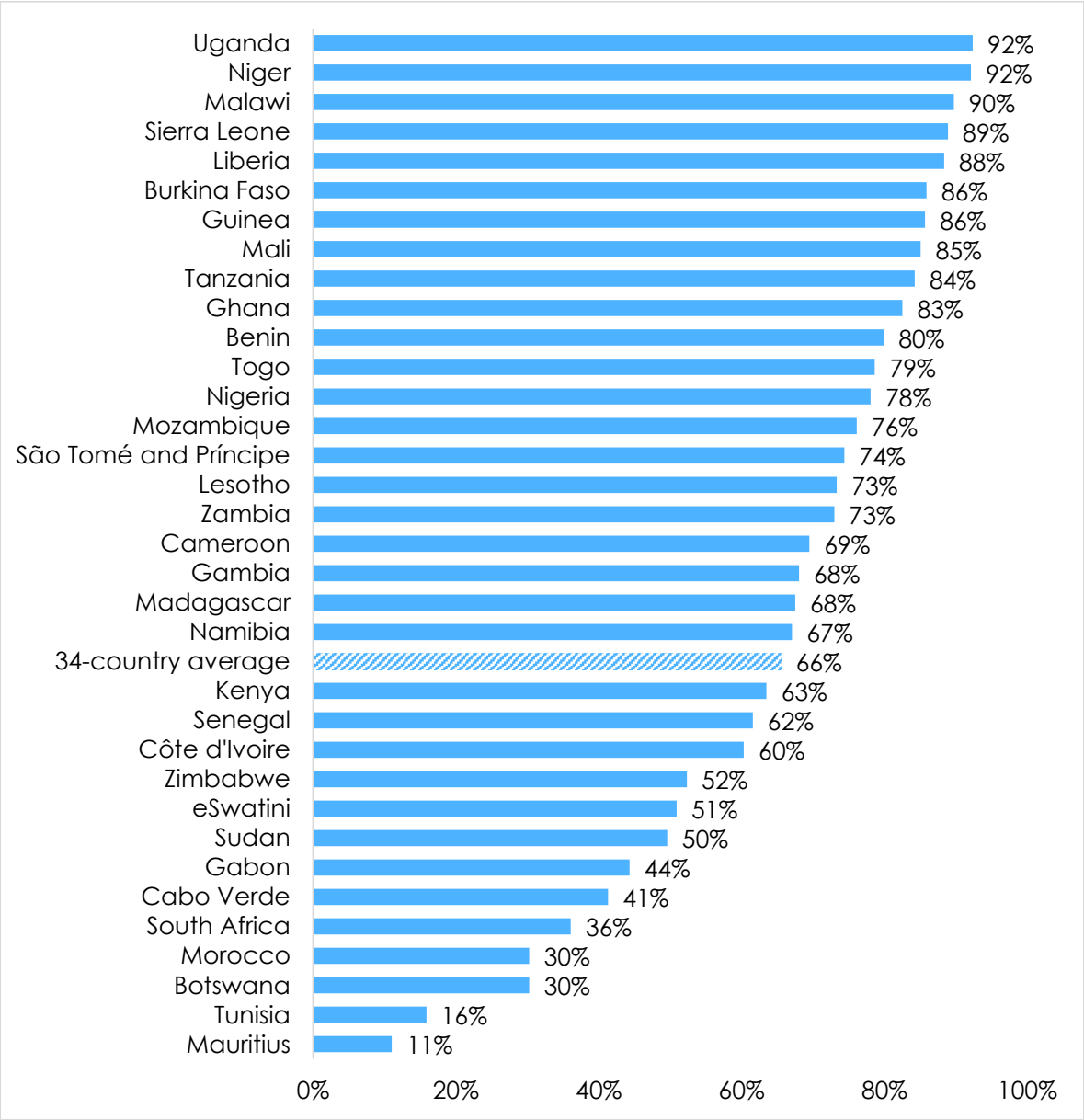
A virus as infectious as SARS-CoV-2 (the virus responsible for COVID-19 disease)[1] can clearly spread rapidly even across and within the wealthiest and most developed societies. This is

[1] SARS-CoV-2 has a "basic reproduction number" (R_0 – the number of new infections generated, on average, by each infected individual) estimated to be as high as 6.4 (Alimohamadi, Taghdir, & Sepandi, 2020), compared to R_0s of just over 2 for pandemic and seasonal influenza (Ellison, 2020).

especially true in areas of high population density, as we have seen in Singapore, New York, and Stockholm. The economic, physical, and demographic realities of Africa, however, generate additional challenges. Many Africans live in relatively small houses and/or within large households, and the effects of these cramped conditions are exacerbated by poor water supply and sanitation facilities that force many people to rely on communal taps and ablution facilities. These factors conspire to significantly increase levels of risk.

To provide a pragmatic index of the numbers of Africans who run a heightened *risk of exposure*, we used Afrobarometer data to identify those respondents who lack piped water or a flush toilet within their dwelling or who live in a single room within a larger structure, an informal shack, or a hostel or within a household that includes six or more adults. We find that fully two-thirds (66%) of all adults across 34 Afrobarometer countries fall into one of these categories. However, Africa is not a country; there is tremendous cross-country and intra-country variation (Figure 1). While virtually the entire adult population falls into this category in Uganda and Niger (92% each), the proportions are as low as 16% in Tunisia and 11% in Mauritius.

Figure 1: Vulnerability: Exposure to infection | 34 countries | 2016/2018



Index based on living in cramped housing or lacking piped water or flush toilet

Susceptibility to illness

Although we now know from detailed and comprehensive seroprevalence studies (Pollán et al., 2020) that many people infected with COVID-19 are "asymptomatic" and reportedly never develop symptoms, not everyone is so lucky. A significant proportion will become ill with mild symptoms (so-called "paucisymptomatic," with loss of the sense of smell, dry cough, fever, and a variety of other symptoms), while a smaller number can develop severe disease (including pneumonia and toxic immunological inflammation). Between 30% and 80% of those with severe disease may die, depending on the severity of symptoms and the availability of intensive health care facilities. The risk of death is aggravated by advanced age and underlying health conditions. While Africa has a disproportionately young population,[2] it also has substantial numbers of people (both young and old) with underlying health conditions, including waterborne maladies stemming from lack of access to clean water; compromised immune systems, particularly as a result of co-infection with tuberculosis or HIV/AIDS; and health conditions related to poor nutrition. In addition, many have limited access to routine or advanced medical care and related treatments.

To generate a practical index of heightened susceptibility to illness, we identified those respondents who run an increased risk of exposure to infection (see above) and who *also* were either 60 years of age or older or told fieldworkers that that they had gone without sufficient food, sufficient clean water, or necessary medical care on a frequent basis in the previous 12 months.

Based on this operational definition, we estimate that almost one-third (31%) of all adults run an increased risk of both being infected and developing COVID-19-related disease. Again, there is substantial cross-country variation, ranging from more than six in 10 people in Guinea (64%) and Niger (62%) to fewer than one in 10 in Tunisia (7%) and Mauritius (2%) (Figure 2). While susceptibility is generally higher in countries with higher levels of exposure, Ghana, Nigeria, Namibia, and São Tomé and Príncipe have appreciably lower levels of susceptibility to illness than other countries that have approximately the same rates of exposure-related risk.

Lack of resilience

In general, the concept of resilience denotes the ability to face adversity, respond, and recover. Taking a health perspective, we operationalize resilience in terms of people's ability to respond to and recover from a severe illness *by accessing medical assistance*. In the context of COVID-19, we assume Africans are more resilient if they live in regions or provinces with good-quality and accessible state medical services. Since vulnerability is a concept with negative connotations while resilience has positive implications, here we assess the *lack* of resilience to ensure this index is consistent with each of the previous measures (of *exposure* and *susceptibility*). In other words, we calculated the number of adults who are most likely to *struggle* to recover from illness because they are *un*able to obtain quality treatment due to poor-quality state health care services in the province or region in which they reside.

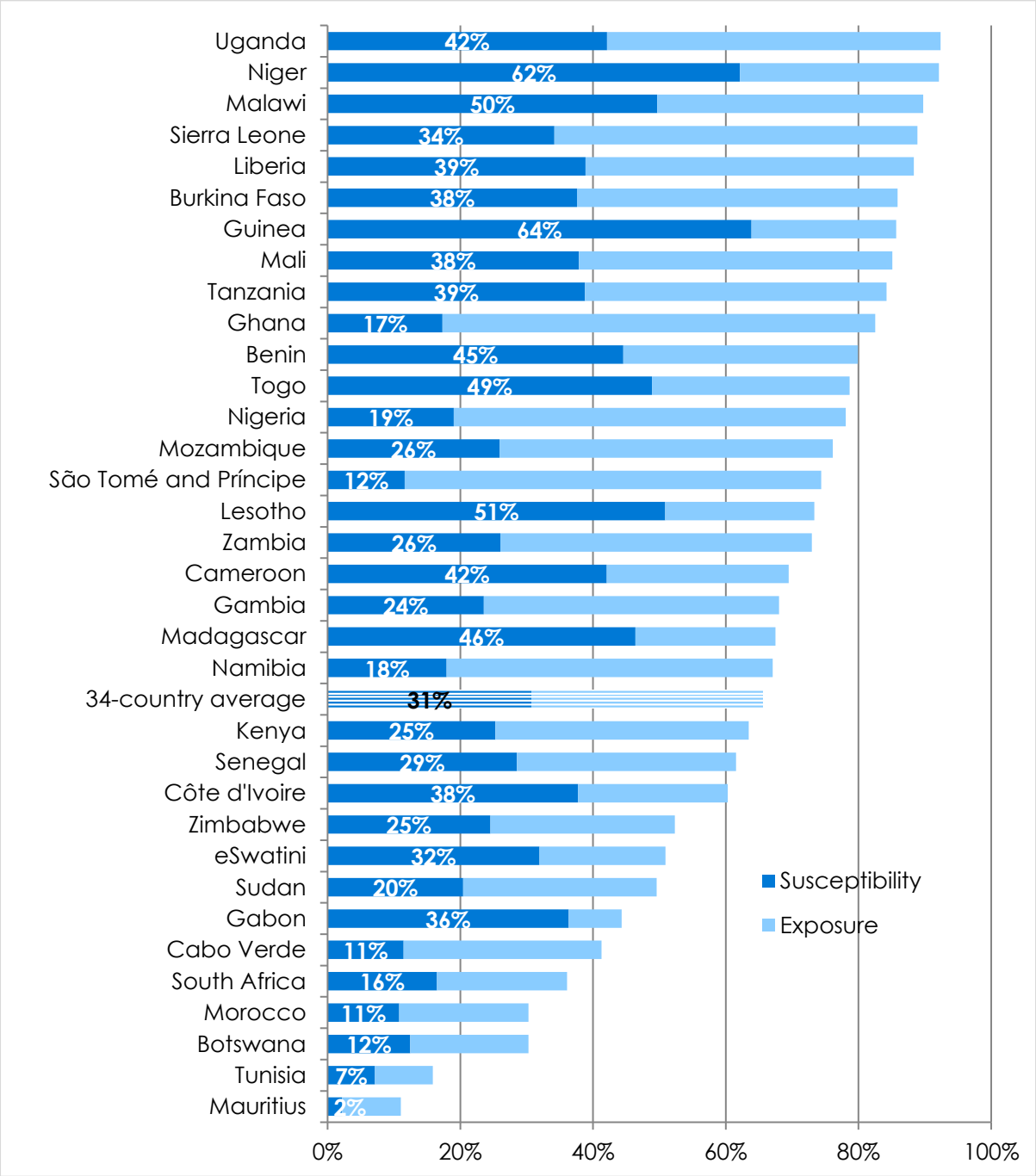
To identify regions with poor state health care services, we turned to Afrobarometer questions that asked respondents whether they had had any contact with a government clinic or hospital in the previous 12 months and, if so, whether they experienced difficulties receiving assistance from medical staff, encountered long waiting times (or never received help), or had to pay a bribe to receive services. We defined a region as having poor state health care services/facilities if 40% or more of users – a rather conservative threshold – encountered at least one of these three problems. Thus, respondents are classified as lacking

[2] Across 34 surveyed countries, just 5% of respondents captured in Afrobarometer's random samples of all adult citizens were aged 65 or older. Because Afrobarometer samples are designed to give all adults in a country an equal and known probability of selection and inclusion, all age cohorts should be represented in these samples in proportion to their actual share within the total population.

resilience if they not only run a heightened risk of exposure and have a heightened susceptibility to illness, but also live in a region/province with poor state health care services.

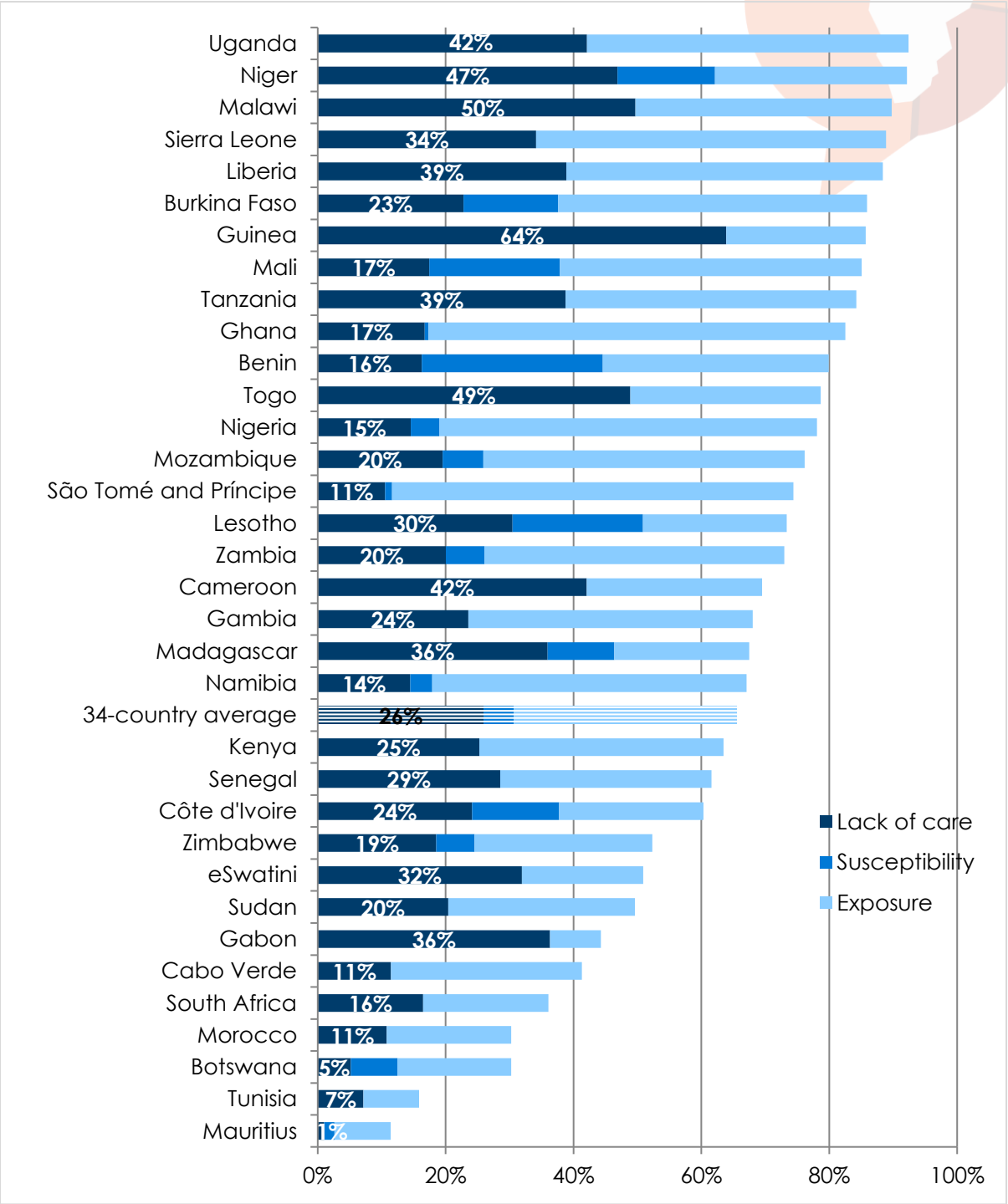
All in all, we estimate that around one-quarter (26%) of all adults in the 34 countries we surveyed fit this description (that is, are exposed, susceptible, and resident in a region with poor state health care services). As with our previous measures, we uncovered tremendous variation across the continent, ranging from half or more of Guineans (64%) and Malawians (50%) to just one in 20 Batswana (5%) and fewer than one in 100 Mauritians (less than 1%) (Figure 3). These figures are likely to increase as more health care service workers are infected and become ill (Powell, 2020).

Figure 2: Vulnerability: Susceptibility to illness | 34 countries | 2016/2018



Index based on heightened risk of exposure and age >59 years or frequently going without enough food, enough clean water, or medical care

Figure 3: Vulnerability: Lack of care | 34 countries | 2016/2018



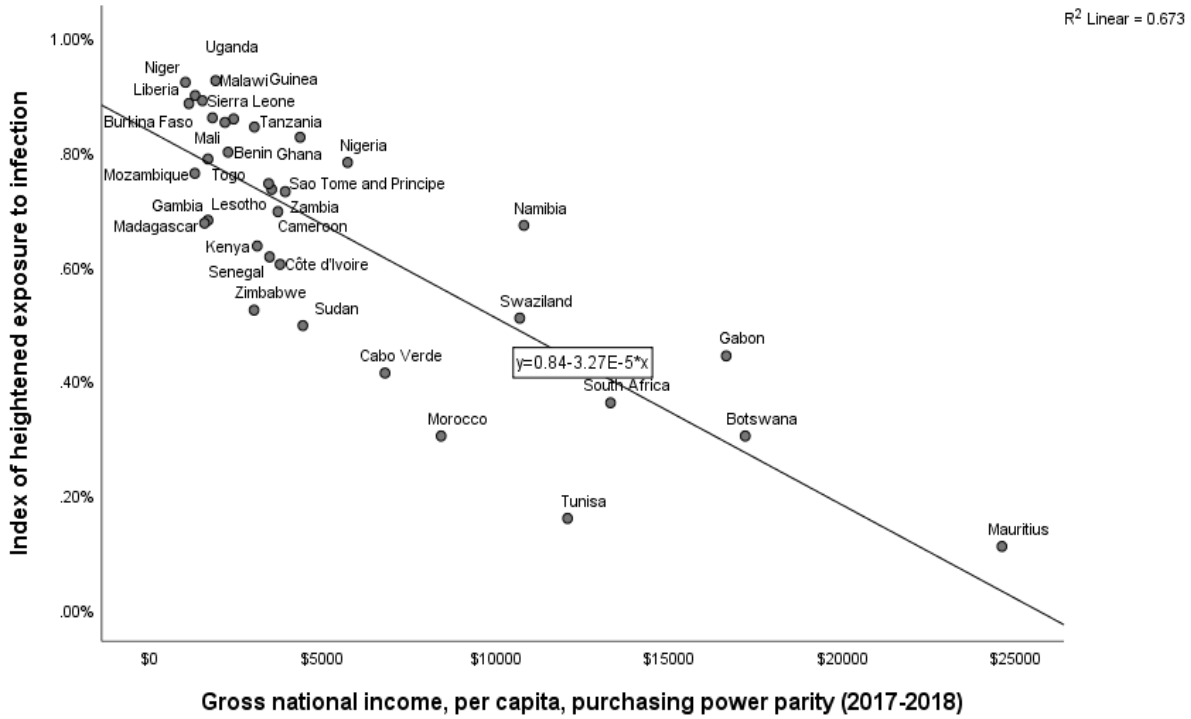
Index based on heightened risk of exposure, heightened susceptibility to illness, and living in provinces/regions with poor public health care systems (>40% of users report difficulty getting care or experience long wait times/never receive care or have to pay bribes to receive services).

Again, dependence on poor-quality state health care services tends to be more likely in countries that also have higher risks of exposure and susceptibility, but this is not always the case. For example, Benin and Mali are two countries with very high exposure risks and quite substantial susceptibility (albeit much lower than their exposure risk). But in both, fewer than half of the people who are susceptible also lack resilience due to poor health services. These differences may reflect greater investment in state health care services/facilities than in housing or sanitation infrastructure (the latter being key to *exposure* and *susceptibility*) in

some countries or regions. In many other countries, in contrast, the experience of poor-quality medical services is so widespread that all of those who are susceptible to illness also lack resilience.

While the three dimensions we have operationalized (*exposure*, *susceptibility,* and *lack of resilience*) are clearly closely related to one another conceptually and parametrically (hence our argument that they are three components of the broader concept of "vulnerability"), there are also important differences. First of all, cross-country differences in heightened exposure to infection are highly correlated with the national level of economic development (Figure 4).[3]

Figure 4: Exposure to infection and national wealth | 34 countries | 2016/2018



In contrast, the correlations between the other two indices (susceptibility to illness and lack of health resilience) and the level of economic development are much more modest.[4] Instead, another factor comes into play: the extent to which governments have provided their citizens with quality state health services as a result of their social, economic, and (importantly) political histories. Countries that have at least some level of experience with democratic rule tend to have done more to improve their public health systems than those experiencing more autocratic governments.[5]

At the individual level, it is widely assumed that greater population density makes urban centers much more likely sites for widespread transmission and infection. And the virus may be more likely to reach urban centers first. But even if there were a benefit to living in less densely populated areas, poor housing/sanitation infrastructure and the lack of high-quality

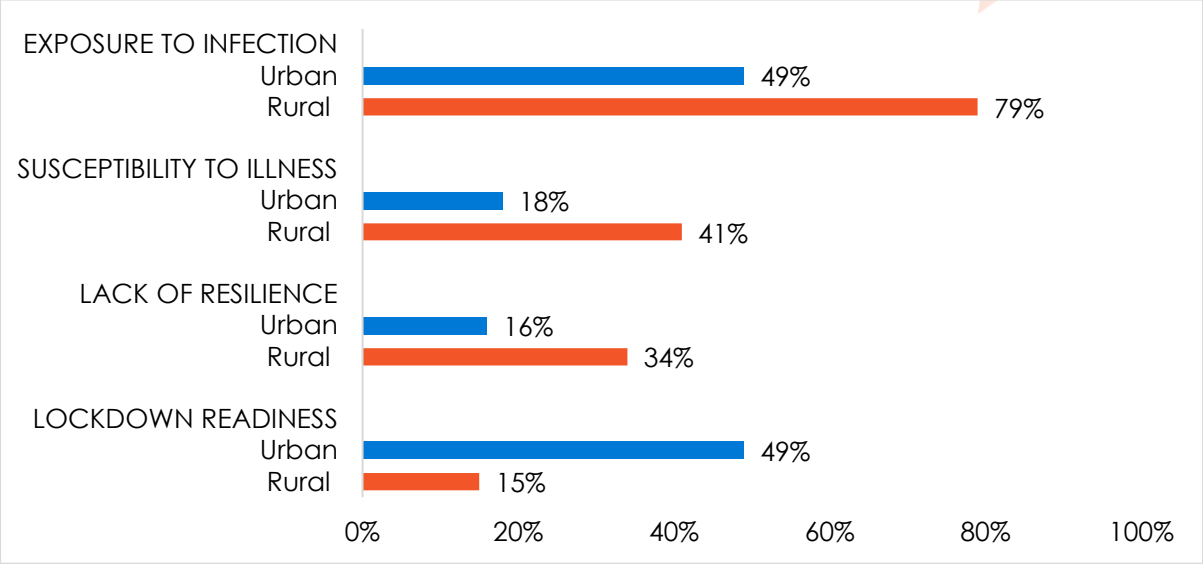
[3] The correlation between gross national income per capita at purchasing power parity (GNI PPP) and the index of heightened risk of exposure (Pearson's r) = -.821, p<.001, N=34.

[4] The correlation between GNI PPP and the index of susceptibility is (Pearson's r) = -.588, p=.000, N=34. The correlation between GNI PPP and the index of lack of health resilience = -.510, p=.002, N=34.

[5] The correlation between "democratic history" (measured as the number of years since independence that a country was scored by Freedom House as an "electoral democracy," with an average civil liberties and political freedoms score of 3.5 or lower) and the index of lack of health resilience (Pearson's r) = -.557, p=.001, N=34.

state health care services appear to cancel this advantage in most rural areas. Indeed, according to our data, once COVID-19 reaches a community, Africans living in rural settlements have a much higher chance of exposure to infection and susceptibility to illness (once infected) and face greater difficulties dealing with and recovering from illness, and, as we will see in the next section, are far less "lockdown ready" (Figure 5).

Figure 5: Urban-rural differences in exposure, susceptibility, and lack of resilience | 34 countries | 2016/2018



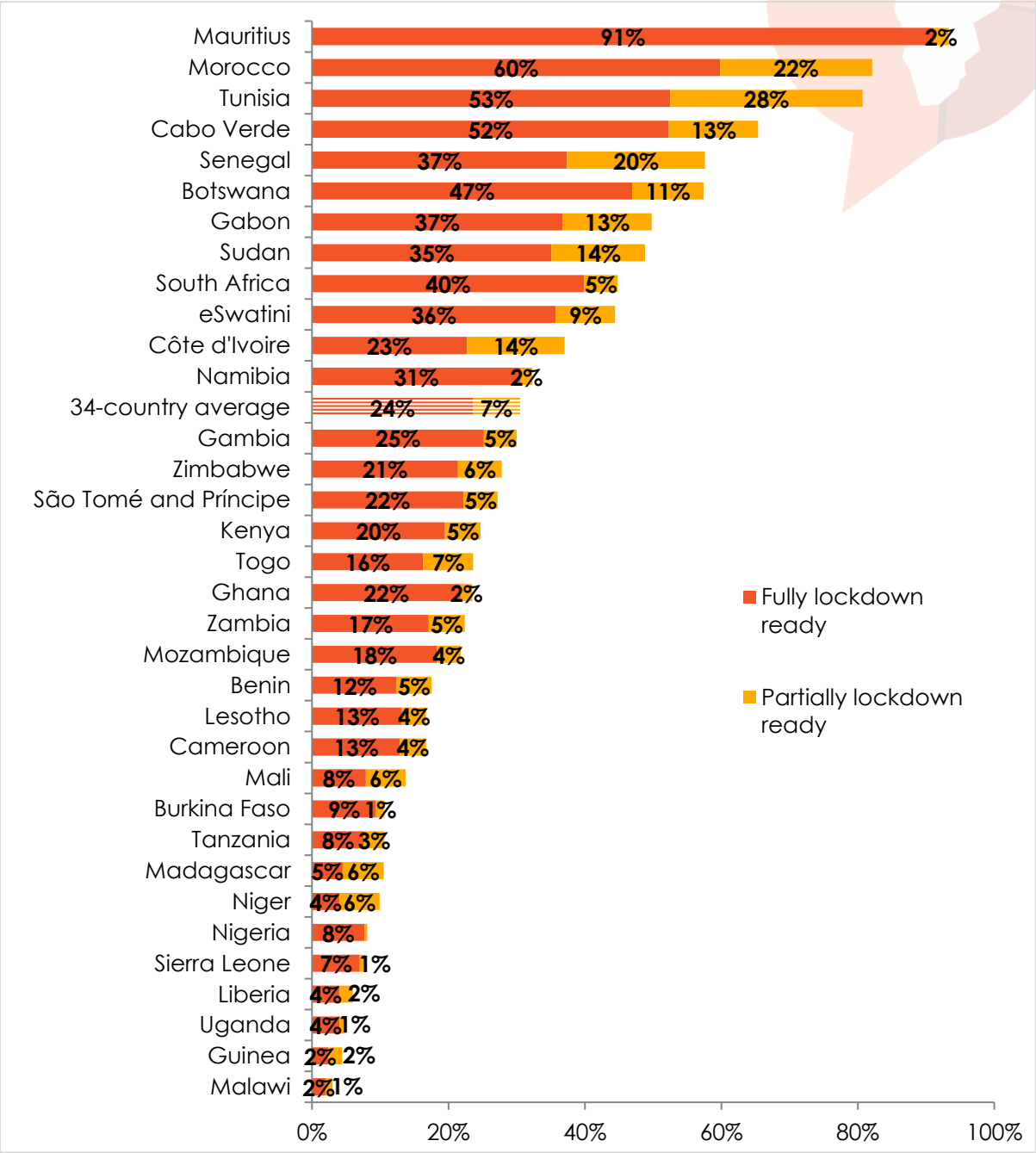
Ability to endure lockdowns

The COVID-19 pandemic carries with it the threat of severe illness or even death. Yet many of the NPIs that governments can use to limit the spread of infection may also be a source of considerable adversity. Measures range from the closure of markets and businesses to bans on public gatherings and restrictions on domestic or international travel. At the individual level, they can include requirements to socially distance, to wear facemasks, to self-isolate as a precaution or when infected/symptomatic, and, at their most extreme, to "shelter in place" for an extended period of time (i.e. to "lock down"). Analysts and activists have, however, expressed concern about whether many people in Africa would be able to stay at home for extended periods of time without access to income-generating activities or basic necessities.

Our measure of "lockdown readiness" draws on the work of Jones, Egger, and Santos (2020) to identify those people who should be better able to "shelter in place" for an extended period of time. This measure comprises people who: 1) have piped water, a flush toilet, and a working electricity connection in their compound; 2) would be able to gather information (through radio or television) and maintain communications (via a cell phone) with the outside world; and 3) are likely to retain an income from formal, regular employment, or who have a savings account. People are considered "fully ready" to "shelter in place" if they meet all three of these criteria. Those who are only "partially ready" may not have employment or communications technology, but they at least have access to water, toilet facilities, and electricity in their own home.

Across the continent, fewer than one-third (30%) of all respondents meet some or all of these conditions and are thus at least "partially lockdown ready," ranging from more than nine in 10 in Mauritius (93%) to fewer than one in 10 in Nigeria (8%), Sierra Leone (8%), Liberia (6%), Uganda (5%), Guinea (4%), and Malawi (3%). And fewer than one in four (24%) meet all of these criteria and are "fully lockdown ready" (Figure 6).

Figure 6: Lockdown readiness | 34 countries | 2016/2018

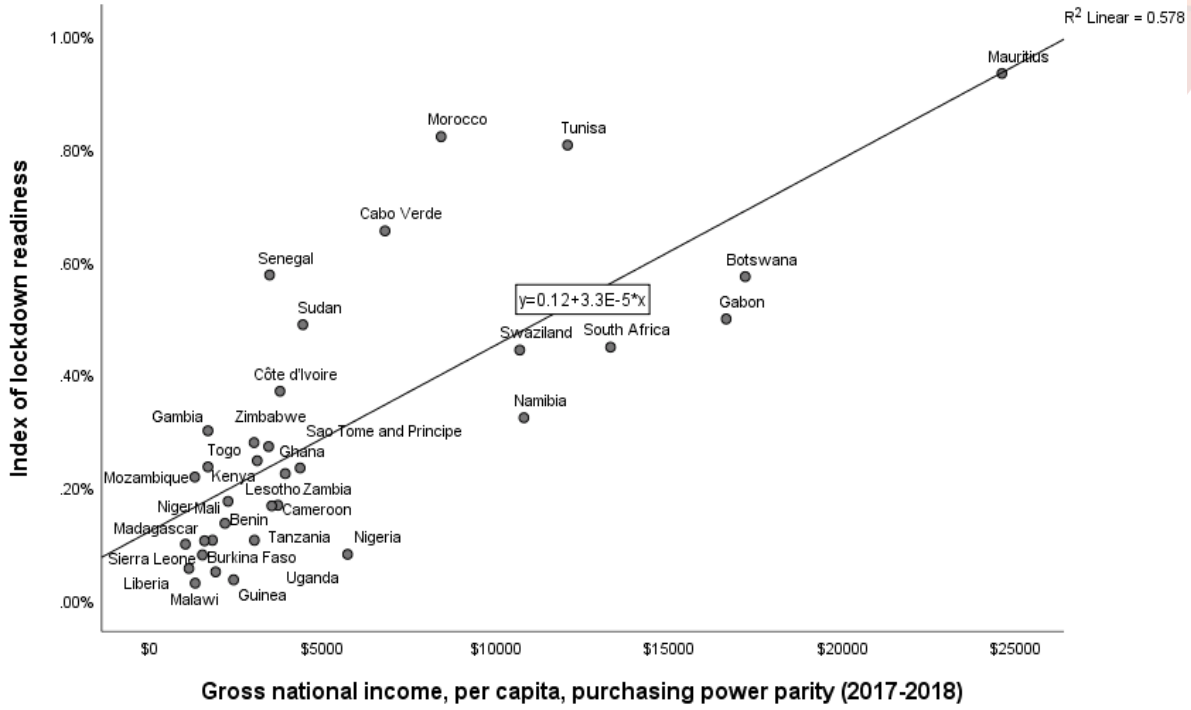


Fully lockdown ready: Have water, toilet, and electricity in home/compound and have access to radio/TV and cellphone, and have regular employment or a savings account

As with the "risk of exposure," levels of "lockdown readiness" are strongly related to national income levels, albeit in the opposite direction: The most developed countries have the highest levels of lockdown readiness (Figure 7).[6]

[6] The correlation between GNI PPP and the index of lockdown readiness (Pearson's r) = .760, p=.000, N=34.

Figure 7: Lockdown readiness and national wealth | 34 countries | 2016/2018



Evaluating Africa's initial interventions

Along with our three-tiered measures of vulnerability, our estimates of lockdown readiness provide us with important information that might be of use to public health officials in assessing risk and in guiding the allocation of critical resources should COVID-19 become increasingly prevalent across Africa in the second half of 2020. At the same time, our measure of lockdown readiness also gives us a tool to assess the interventions that have already been pursued across the continent in the first half of the year.

As mentioned at the beginning of this paper, governments in 46 African countries have mandated measures ranging from states of emergency or national disaster to partial or full bans on public gatherings, restrictions on international and/or domestic travel, and strictly enforced curfews and full lockdowns (International Center for Not-for-Profit Law, 2020). While these measures require people (and societies) to do – or not to do – a range of very different things, they can be compared along the common dimension of "stringency."

For this, we turn to Oxford University's COVID-19 Government Response Stringency Index. Hale, Angrist, Kira, Petherick, & Phillips (2020) have gathered data on eight measures, including: closure of (1) schools, (2) public transport, and (3) workplaces; (4) cancellation of public events; (5) restrictions on the size of gatherings; restrictions on (6) domestic and (7) international movement; and (8) requirements to stay at home. Data have been collected to score each country on each of these dimensions using an ordinal scale for each day beginning on 1 January 2020. Scores are standardized to a scale running from 0 to 100, and then averaged across all eight dimensions.

The stringency index reveals that African governments' responses to COVID-19 varied considerably in terms of *when* they started, the *duration* for which they were imposed, and the maximum *level of stringency* applied. While most of the countries covered by Afrobarometer began to impose some form of restrictions in March 2020, seven introduced them in February, and as many as eight (almost a quarter) began in January (led by Nigeria and Botswana, but also including Ghana, Guinea, Kenya, Liberia, Uganda, and Zimbabwe).

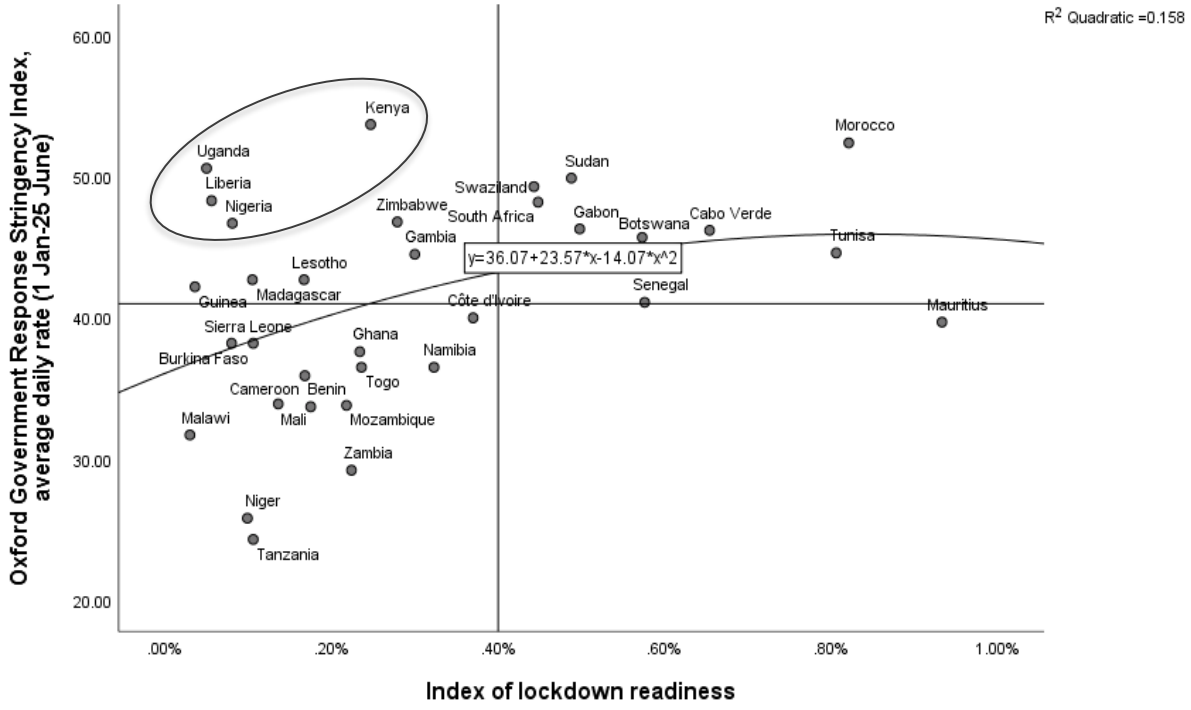
The highest daily levels of stringency were promulgated in Kenya (95.4), Madagascar (95.4), Uganda (93.5), and Lesotho (90.7), while the lowest were in Tanzania (50.0), Malawi (57.4),

and Benin (59.7). There was also substantial variation across countries in the number of days over which restrictions were imposed at each level of stringency. To take this into account, we average the composite score for each day for the period 1 January-25 June 2020. Across the 33 Afrobarometer countries for which data are available (stringency scores are not available for São Tomé and Principe), the *average* level of daily stringency during this period was 41.4, with a range from 24.3 (in Tanzania) to 53.7 (in Kenya).

What might explain this variation in NPIs across countries? One important factor appears to be the degree to which ordinary people are (or are perceived to be) able to endure restrictions. Indeed, with some important exceptions, a majority of African governments in our sample appear to have calibrated their responses and interventions according to the actual level of "lockdown readiness" of their country. In the first half of 2020, governments tended to implement more stringent responses in those countries with societies characterized by higher levels of readiness.[7] In Figure 8, we find in the lower left quadrant countries whose state intervention score was below the mean level of stringency (41.4) but whose levels of readiness were below 40%. Yet, since lockdown readiness was generally lowest where the risk of exposure to infection was highest, government public health interventions were least stringent in the very countries that had the highest levels of exposure vulnerability (Figure 9), a paradox similar to Tudor Hart's (1971) "inverse care law."[8]

But we also found a unique set of countries in the upper left quadrant of Figure 8 – most notably Kenya, Liberia, Nigeria, and Uganda – that imposed extremely restrictive measures in low-readiness societies. At the same time, Figure 9 demonstrates that the severity of the interventions in these countries might be explained (and perhaps justified *a priori* or *post hoc*) by the high levels of infection risk in those societies.

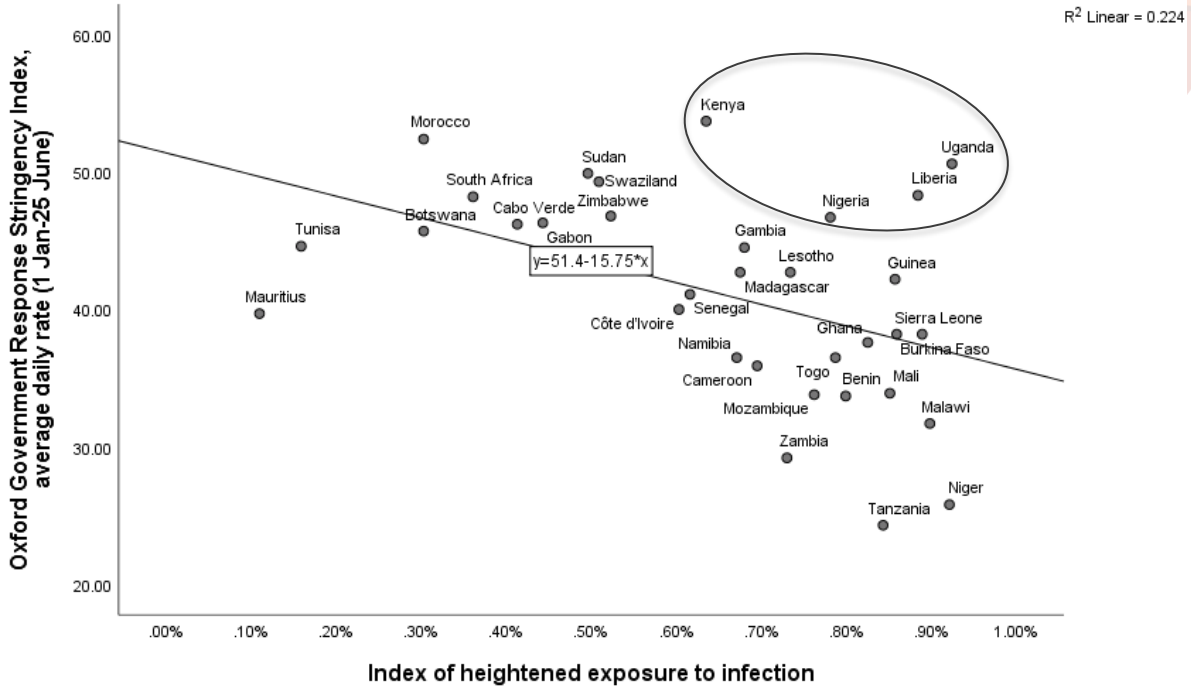
Figure 8: Stringency of African COVID-19 responses, by lockdown readiness



[7] The relationship between the Government Response Stringency Index and the index of lockdown readiness (Pearson's r) = .389, p=.02, N=33.

[8] The relationship between the Government Response Stringency Index and the index of heightened exposure to infection (Pearson's r) = -.477, p=.005, N=33.

Figure 9: Stringency of African COVID-19 responses, by risk of exposure to infection



To what extent did Africa's interventions actually succeed in reducing public mobility and social contact? To answer this question, we turn to Google's COVID-19 Community Mobility Report (Google LLC, 2020). For each day, these data measure (albeit only for those users who have "opted in" to the "location history" function in their Google account) relative changes in visits to six types of sites – 1) grocery stores and pharmacies, 2) restaurants and retail stores, 3) parks and recreation, 4) public transport, 5) places of work, and 6) residences – compared to a baseline comprising the median value for the corresponding day of the week during the period 3 January-6 February, i.e. prior to widespread outbreaks of COVID-19 outside China.

These mobility data are available for 24 of the 34 Afrobarometer countries. Across these 24 countries, the average level of reduction in mobility for the period 15 February-25 June was -19.2%. The greatest reductions were recorded in Mauritius (-41.3%) and Morocco (-40.8%), and the least in Tanzania (-9.2%), Mali (-9.1%), Niger (-8.4%), Zambia (-6.4%), and Benin (-6.1%).

The extent of citizen compliance with state interventions (at least in the form of reduced mobility) was a function both of people's ability to comply (lockdown readiness) and of the stringency of government policies. As we can see in Figure 10, there is a strong relationship between reduced mobility and lockdown readiness (though Nigerians and Ugandans tended to comply at a higher rate than their level of readiness would suggest).[9] But we also see a similarly strong relationship between the reduction in mobility and the severity of government restrictions (Figure 11). There are outliers, such as Mauritius, which implemented restrictions that were only a little more stringent than Burkina Faso's but achieved some of the largest reductions in movement. Morocco also seems to have gotten more "bang for its buck" in response to its quite strict intervention, while Kenya obtained relatively lower levels of compliance given its very strict lockdown.[10] Importantly, the impact of government policy

[9] The relationship between the Google Community Mobility Index and the index of lockdown readiness (Pearson's r) = -.738, p=.000, N=33.

[10] The relationship between the Google Community Mobility Index and the Government Stringency Index (Pearson's r) = -.729, p=.000, N=23.

stringency still retains an independent impact when we control for the level of lockdown readiness, although its impact is reduced considerably, indicating that both variables are likely to have independent impacts on compliance.[11]

Figure 10: Reduced social mobility, by level of lockdown readiness

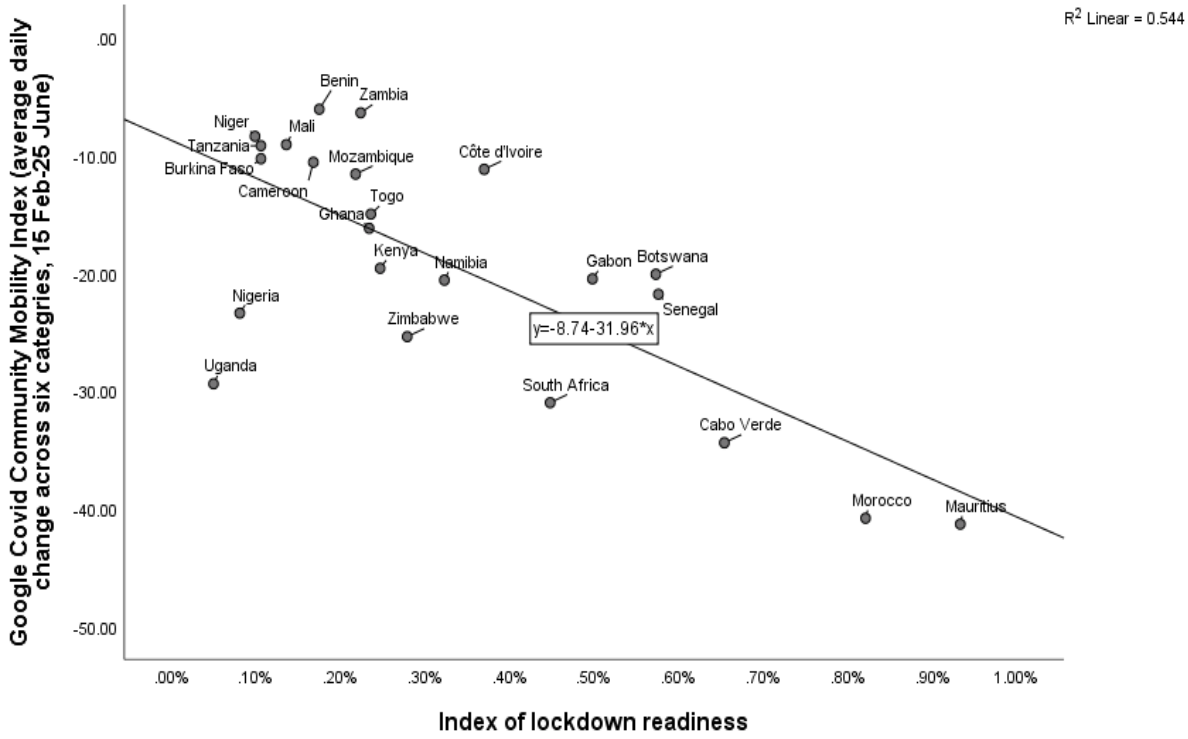
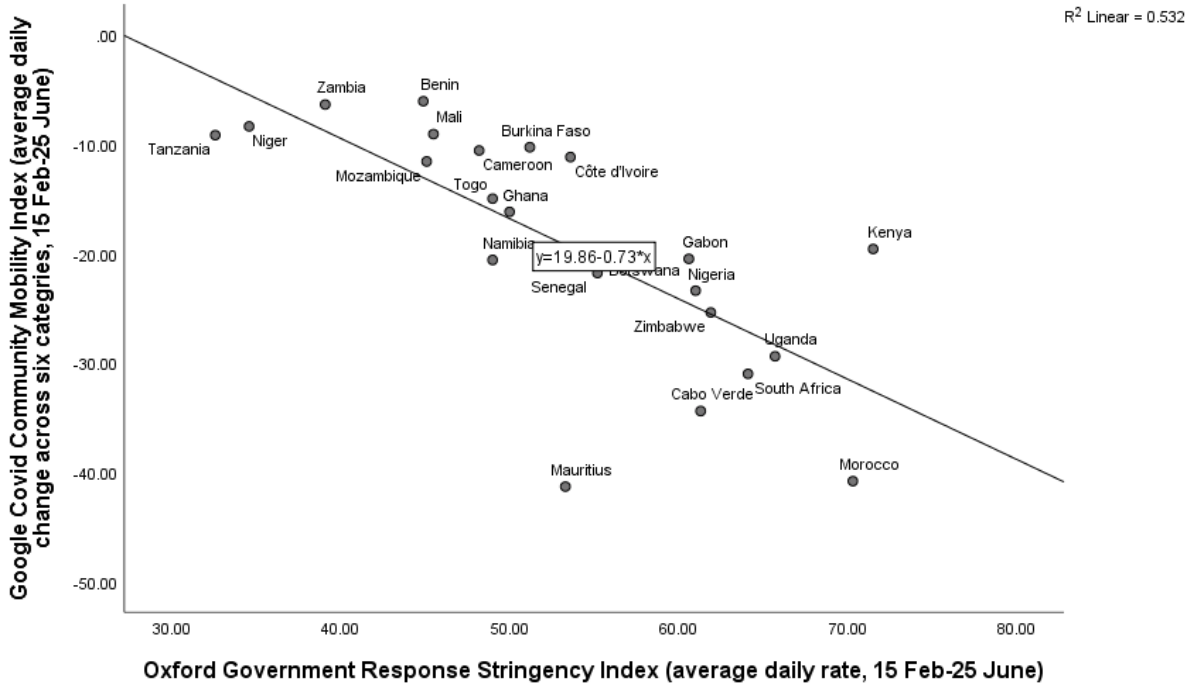


Figure 11: Reduced social mobility, by stringency of government response



[11] The regression coefficient for policy stringency as a predictor of mobility reduction is b= -.734, p=.000). After controlling/adjusting for the level of lockdown readiness, the coefficient is attenuated (to -.510, p=.001).

Deploying government assets to strengthen compliance

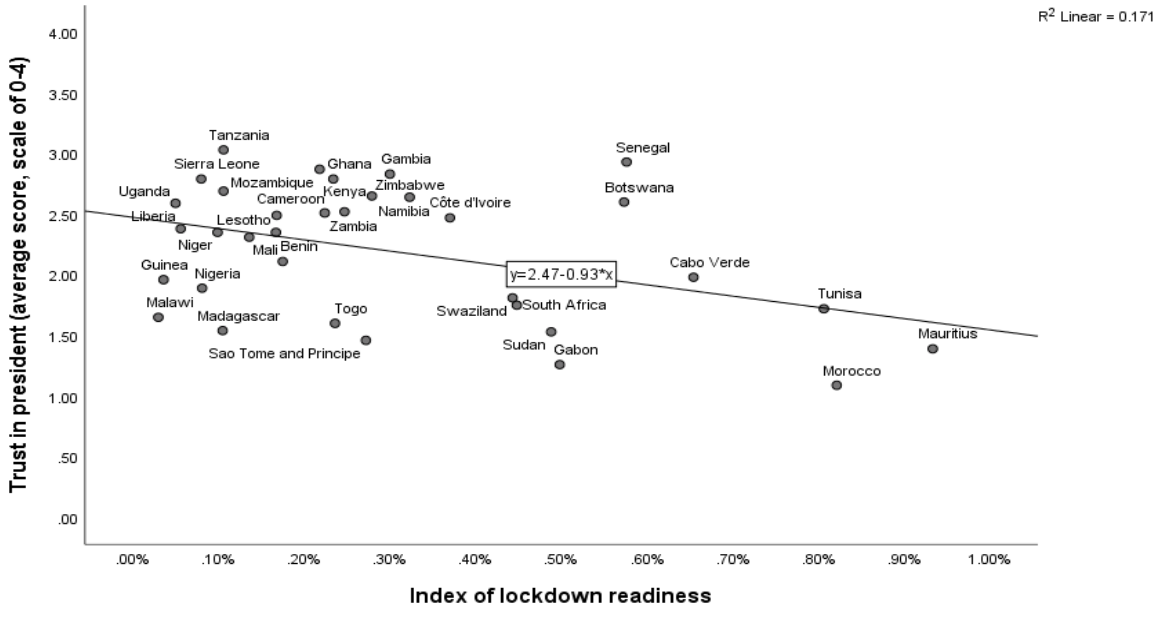
Gyimah-Boadi and Logan (2020b) identify key institutional assets and liabilities that African governments bring to the table as they formulate their responses to the pandemic and assess whether their publics will accept the restrictions that most have had to impose – and may have to impose again as the situation worsens across the continent, and/or during future waves of the pandemic. They focus especially on widespread state legitimacy and trust in religious and (to a lesser extent) traditional leaders, and much less widespread trust in elected leaders, as resources that can help secure public cooperation. Here we briefly consider how the presence of some of these institutional assets corresponds to lockdown readiness. In short, the question is whether countries that face the greatest challenges in terms of low lockdown readiness can hope to draw on these soft resources to secure essential public cooperation.

For instance, across all 34 countries, 85% of respondents agree with the statement that "it is important to obey the government in power, no matter who you voted for." And very large majorities agree that key government institutions, including the police (78%), courts (74%), and tax officials (73%), have the right to make binding decisions and to expect public obedience and/or compliance.

They also note, however, that with regard to professed trust in formal state and political institutions, the findings are far less robust. While 64% say they trust the army "somewhat" or "a lot," only a bare majority say the same thing about the courts (53%), the president/prime minister (52%), and the police (51%). Trust is even lower when it comes to local councils (43%), Parliament (43%), the electoral commission (43%), and the governing party (42%). Trust in *informal* institutions is significantly higher: More than two-thirds (69%) say they trust religious leaders, and more than half (57%) trust traditional leaders.

Trust in chief executives (presidents and prime ministers) is particularly relevant, since these leaders should be the central figures leading public interventions and justifying the need for extreme measures such as lockdowns. The good news is that while a bare majority of Afrobarometer respondents express trust in presidents across all countries, the percentages are substantially higher in some low-readiness countries (Figure 12). These include Tanzania, Uganda, Mozambique, Ghana, and the Gambia. Yet in several other low-readiness countries, including Malawi, Madagascar, Togo, and São Tomé and Principe, trust in the president is much lower. Thus, the degree to which chief executives should lead government messaging probably needs to be decided on a case-by-case basis.

Figure 12: Trust in the president and lockdown readiness



But even countries with low presidential trust may be able to call on other assets. Popular belief in the importance of obeying the law and trust in religious leaders are both not only high across most countries, but they are consistently higher *in countries with low levels of lockdown readiness* (Figure 13 and Figure 14). These governments may therefore be especially inclined toward enlisting the support of priests, imams, or other religious leaders, who can lend their credibility to messaging strategies designed to explain public health interventions and obtain higher levels of citizen compliance. Previous research suggests that failure to involve these informal leaders in HIV prevention and in the care of people living with HIV/AIDS constituted a missed opportunity during that deadly pandemic (e.g. Surur & Kaba, 2000; Watt, Maman, Jacobson, Laiser, & John, 2009).

Figure 13: Legitimacy and lockdown readiness

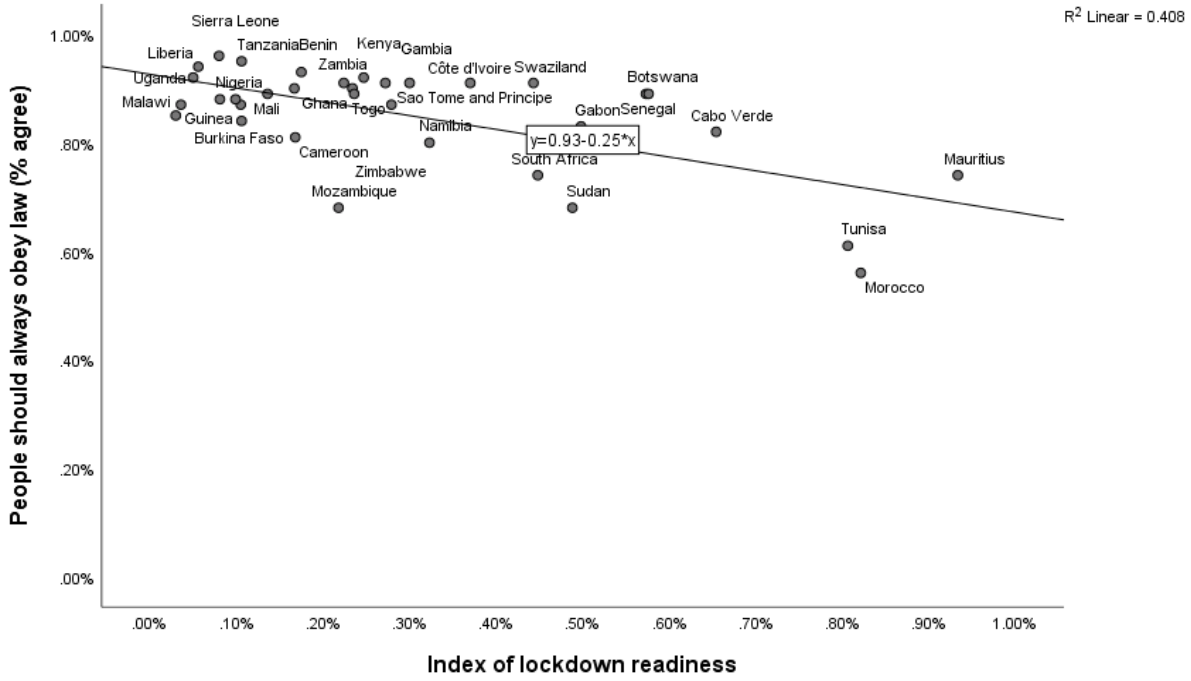
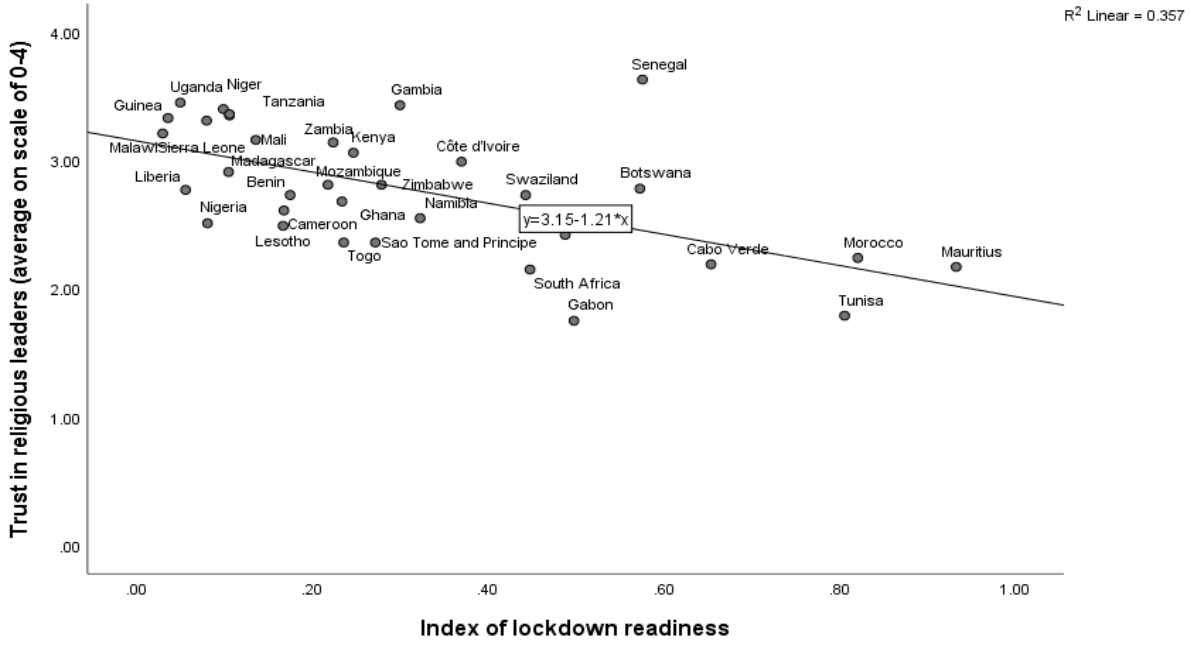


Figure 14: Trust in religious leaders and lockdown readiness



Conclusion

While early interventions by African countries may have helped delay the transmission of COVID-19, the virus is now present in all countries on the continent, and it is spreading rapidly in many (Burke, 2020). As can be seen in places as diverse as Leicester (UK), Los Angeles, and Bologna, high levels of development do not preclude rapid spread of the virus and extensive illness and death. But the data reported above suggest that high levels of poverty leave much of Africa with exceptionally high levels of vulnerability in terms of exposure to infection, susceptibility to illness, and inability to access effective state health care. Moreover, many Africans are hard-pressed to comply with many of the public health interventions used, especially lockdowns.

Even as restrictions are eased or lifted, many wonder whether a second round of infections lies ahead, along with government-imposed responses to limit the spread.[12] The findings here suggest that promoting or adopting one-size-fits-all responses would be misplaced. Levels of vulnerability, lockdown capacity, willing compliance, and messaging resources all vary widely across countries, and these variations should be understood and taken into account as governments plan their next steps.

Do your own analysis of Afrobarometer data – on any question, for any country and survey round. It's easy and free at www.afrobarometer.org/online-data-analysis.

[12] Both Morocco (France24, 2020) and South Africa have already reintroduced some controls that were previously eased.

References

Africa CDC. (2020). Africa CDC dashboard. Africa Centres for Disease Control and Prevention.

Alimohamadi Y., Taghdir, M, & Sepandi, M. (2020). The estimate of the basic reproduction number for novel coronavirus disease (COVID-19): A systematic review and meta-analysis. *Journal of Preventive Medicine and Public Health, 53*, 151-157.

BBC News. (2020). Coronavirus: John Magafuli declares Tanzania free of COVID-19. 8 June.

Beech, H., Rubin, A., Kurmanaev, A., & MacLean, R. (2020). The COVID-19 riddle: Why does the virus wallop some places and spare others? New York Times. 3 May.

Binding, L. (2020). Coronavirus is taking 'different path' in Africa due to age differences. SkyNews. 24 May.

Bozancianu, Constanin Manuel, Kim Yi Donne, Hanno Hilbig, Macartan Humphreys, Sampada KD, Nils Lieber, and Alexandra Socco. 2020. *Political and Social Correlates of COVID-19 Mortality.* Unpublished Paper.

Burke, J. (2020). South Africa warns of coronavirus 'storm' as outbreak accelerates across continent. Guardian. 9 July.

De Waal, A. (2020). COVID-19 in Africa: 'Know your epidemic, act on its politics.' African Arguments. 31 March.

Ellison, G. T. H. (2020). COVID-19 and the epistemology of epidemiological models at the dawn of AI. *Annals of Human Biology, 47* (in press).

France24. (2020). Morocco shuts down major cities after spike in Covid-19 cases. 27 July.

Frazier, T. G., Thompson, C. M., & Dezzani, R. J. (2014). A framework for the development of the SERV model: A spatially explicit resilience-vulnerability model. *Applied Geography, 51*, 158-172.

Frey, C. B., Presidente, G., & Chen, C. (2020). COVID-19 and the future of democracy. Vox CEPR Policy Portal. 20 May.

Google LLC. (2020). Google COVID-19 community mobility report. Accessed 4 July 2020.

Gyimah-Boadi, E., & Logan, C. (2020a). Global response to COVID-19 in Africa must protect lives, livelihoods, and freedoms. OECD Development Matters. 8 April.

Gyimah-Boadi, E., & Logan, C. (2020b). Compassion vs. coercion: Protecting lives & enhancing legitimacy in COVID-19 Africa. Democracy in Action. 6 May.

Hale, T., Angrist, N., Kira, B., Petherick, A., & Phillips, T. (2020). Variation in government responses to COVID-19. BSG Working Paper Series, No. 232. University of Oxford.

Hart, J. T. (1971). The inverse care law. *Lancet, 297,* 405-412.

Hess, J. J., McDowell, J. Z., & Luber, G. (2012). Integrating climate change adaptation into public health practice: Using adaptive management to increase adaptive capacity and build resilience. *Environmental Health P'* 120:171-9.

Hirsch, A. (2020). Why are Africa's coronavirus successes being overlooked? Guardian. 21 May.

Houreld, Katherine and David Lewis. 2020. "In Africa, a lack of data raises fears of 'silent epidemic.'" Reuters., 8 July 2020. https://graphics.reuters.com/HEALTH-CORONAVIRUS/AFRICADATA/dgkplxkmlpb/

International Center for Not-for-Profit Law. (2020). African government responses to COVID-19: An overview from the COVID-19 civic freedom tracker.

Jones, S., Egger, E.-M., & Santos, R. (2020). Is Mozambique prepared for a lockdown during the COVID-19 pandemic? WIDERAngle, UNU-WIDER.

Levinson, R. (2020). Africa's able pandemic response merits greater US support. Hill. 25 May.

Loembé, M. M., Tshangela, A., Salyer, S., Varma, J., Ouma, A. O., & Nkengasong, J. (2020). COVID-19 in Africa: The spread and response. Nature Medicine. 11 June 2020.

Logan, C., Howard, B., & Gyimah-Boadi, E. (2020). Lessons from COVID-19 in Africa: Crisis and opportunity. APRM Governance Link newsletter, issue 8 – A special report on COVID-19. May 2020.

MacLean, R. (2020). COVID-19 outbreak in Nigeria is just one of Africa's alarming hot spots. New York Times. 17 May.

Marbot, O. (2020). Coronavirus: Unpacking the theories behind Africa's low infection rate. Africa Report. 5 May.

Morrell, W. (2018). Let's stop trying to quantify household vulnerability: The problem with simple scales for targeting and evaluating economic strengthening programs. *Global Health: Science and Practice, 6*(1),150-160.

Moore, J. (2020). What African nations are teaching the west about fighting the coronavirus. New Yorker. 15 May.

Obulutsa, George. 2020. "Africa Urged to Test More As Coronavirus Cases Exceed 500,000." *Reuters Africatech* 9 July.

Pollán M., Pérez-Gómez, B., Pastor-Barriuso, R., Oteo, J., Hernán, M. A., Pérez-Olmeda, M., Sanmartín, J. L., Fernández-García, A., Cruz, I., de Larrea, N. F., & Molina, M. (2020). Prevalence of SARS-CoV-2 in Spain (ENE-COVID): A nationwide, population-based seroepidemiological study. *Lancet*. 6 July. DOI: 10.1016/S0140-6736(20)31483-5.

Powell, A. (2020). With shrinking health force, Africa struggles amid COVID crisis. VOA News. 26 July.

Sly, L. (2020). Hunger could be more deadly than coronavirus in poorer countries. Washington Post. 14 May.

Surur, F., & Kaba, M. (2000). The role of religious leaders in HIV/AIDS prevention, control, and patient care and support: A pilot project in Jimma Zone. *Northeast African Studies, 7,* 59-79.

Watt, M. H., Maman, S., Jacobson, M., Laiser, J., & John, M. (2009). Missed opportunities for religious organizations to support people living with HIV/AIDS: Findings from Tanzania. *AIDS Patient Care and STDs, 23,* 389-394.

World Health Organization. (2020). WHO coronavirus disease (COVID-19) dashboard.

York, G. (2020). Tanzanian hospitals overwhelmed by dramatic rise in secret COVID-19 cases, US says. Globe and Mail. 13 May.

Appendix

Table A.1: Afrobarometer Round 7 fieldwork dates and previous survey rounds

Country	Months when Round 7 fieldwork was conducted	Previous survey rounds
Benin	Dec 2016-Jan 2017	2005, 2008, 2011, 2014
Botswana	June-July 2017	1999, 2003, 2005, 2008, 2012, 2014
Burkina Faso	Oct 2017	2008, 2012, 2015
Cameroon	May 2018	2013, 2015
Cape Verde	Nov-Dec 2017	2002, 2005, 2008, 2011, 2014
Côte d'Ivoire	Dec 2016-Jan 2017	2013, 2014
eSwatini	March 2018	2013, 2015
Gabon	Nov 2017	2015
Gambia	July-August 2018	N/A
Ghana	Sept 2017	1999, 2002, 2005, 2008, 2012, 2014
Guinea	May 2017	2013, 2015
Kenya	Sept-Oct 2016	2003, 2005, 2008, 2011, 2014
Lesotho	Nov-Dec 2017	2000, 2003, 2005, 2008, 2012, 2014
Liberia	June-July 2018	2008, 2012, 2015
Madagascar	Jan-Feb 2018	2005, 2008, 2013, 2015
Malawi	Dec 2016-Jan 2017	1999, 2003, 2005, 2008, 2012, 2014
Mali	Feb 2017	2001, 2002, 2005, 2008, 2013, 2014
Mauritius	Oct-Nov 2017	2012, 2014
Morocco	May 2018	2013, 2015
Mozambique	July-August 2018	2002, 2005, 2008, 2012, 2015
Namibia	Nov 2017	1999, 2003, 2006, 2008, 2012, 2014
Niger	April-May 2018	2013, 2015
Nigeria	April-May 2017	2000, 2003, 2005, 2008, 2013, 2015
São Tomé and Principe	July 2018	2015
Senegal	Dec 2017	2002, 2005, 2008, 2013, 2014
Sierra Leone	July 2018	2012, 2015
South Africa	August-Sept 2018	2000, 2002, 2006, 2008, 2011, 2015
Sudan	July-August 2018	2013, 2015
Tanzania	April-June 2017	2001, 2003, 2005, 2008, 2012, 2014
Togo	Nov 2017	2012, 2014
Tunisia	April-May 2018	2013, 2015
Uganda	Dec 2016-Jan2017	2000, 2002, 2005, 2008, 2012, 2015
Zambia	April 2017	1999, 2003, 2005, 2009, 2013, 2014
Zimbabwe	Jan-Feb 2017	1999, 2004, 2005, 2009, 2012, 2014

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